Taking up the design computations for a 50-tonne open-hearth furnace regenerator, the following assumptions are made:

Melting capacity of furnace..... 50 tons
Number of heats made per week..... 15
Average time per heat, charge to tap..... 8 hours 20 minutes
Coal consumption per ton of steel..... 300 kg (660 Ib)
.Average number of reversals per hour....:..... 3
Secondary air supply, per cent of theoretical..... 140

GASES OF COMBUSTION ON BURNING 100 VOLUMES OF HAW PRODUCER GAS

	Vol. Calories	0_2	$C0_2$	H_2O	N_2
H_2	11 26X 58 2=	5 63		11.26	22.52
CH_4	3.24X195.2=	6.48	3.24	6.48	25.92
CO	632 .	14 83	29 65		59.32
O_2	0.19				
CO_2	1.25		1.25		
N_2	50.69				
H_2O	3.72			3.72	
	100.00	26.94	34.14	21.46	158.45
	3309	0.19			0.76
		26.75	34.14	21.46	157.69

COMBUSTION OF 100 MOLECULAR VOLUMES OF GAS

Air — Products of Combustion in Molecular Volumes

Supply, Per Cent	Molec-ular Volume	Excess Air	0_2	$C0_2$	H_20	Excess $_2$	N_2	Total
100	133.75	0.00	0.00	34.14	21.46	0.00	157.6	213.2
120	160.50	26.7	5.35	34.14	21.46	21.40	179.0	240.0
140	187.25	53.5	10.70	34.14	21.46	42.80	200.4	266.7
180	240.75	107.00	21.40	34.14	21.46	85.60	243.29	320.29

These values may be evaluated as cubic feet, cubic meters, etc.

A portion of this air is required for the oxidization of certain elements in the charge and additions.